WE CLAIM:

1. A method for controlled electroless plating of uniform metal layers onto exposed metallizations in integrated circuits positioned on the active surface of semiconductor wafers, comprising the steps of:
   maintaining a plurality of said wafers approximately parallel to each other at predetermined distances;
   immersing said wafers into an electroless plating solution flowing in laminar motion at constant speed substantially parallel to said active surface of said wafers;
   rotating each of said wafers at constant speed and synchronously with each other; and
   creating periodic relative motion in changing directions between said plating solution and said wafers, thereby uniformly plating layers onto said exposed metallizations by controlled electroless deposition.
2. The method according to Claim 1 wherein said exposed metallizations are non-oxidized copper metallizations of bond pads positioned in said integrated circuits having copper metallizations.
3. The method according to Claim 1 wherein said plurality of said wafers comprises between 10 and 30 wafers.
4. The method according to Claim 1 wherein said relative motion comprises a periodic superposition of directions and speeds of the motion of said wafers and the motion of said solution, thus creating periodically changing wafer portions where the directions and speeds are additive and where the directions and speeds are

opposed and subtractive.

5. The method according to Claim 1 further comprising the steps of:

inserting the wafers into a clean-up or presoak bath;

removing the wafers from the clean-up or presoak bath; and

inserting the wafers into the plating solution.

6. An apparatus for controlled electroless plating of uniform layers onto exposed metallizations in integrated circuits positioned on the active surface of semiconductor wafers, comprising:

means for holding a plurality of said wafers approximately parallel to each other at pre-determined distances;

means for rotating each wafer of said plurality;

means for electroless plating in a solution flowing substantially in laminar motion at constant speed substantially parallel to said active surface of said wafers; and

means for creating periodic relative motion in changing directions between said plating solution and said wafers, whereby uniformly plated layers are electrolessly deposited onto said exposed metallizations.

7. The apparatus according to Claim 6 wherein said means for rotating wafers creates constant wafer speed and synchronous rotation between wafers.

8. The apparatus according to Claim 6 wherein said holding means comprises a plurality of grooved rollers positioned parallel to each other, each of said rollers having grooves around said rollers, shaped to support

said wafers, the respective grooves of each roller positioned in a plane suitable for holding one of said wafers.

9. The apparatus according to Claim 8 wherein said plurality of rollers comprises three rollers.

10. The apparatus according to Claim 6 wherein said rotating means comprises a central sun gear driving said grooved rollers positioned in parallel around said central gear.

11. The apparatus according to Claim 6 further including a motor associated with the apparatus which rotates the apparatus in a plating solution.